

**APPENDIX 2**

**Letter Dated December 5, 2001 From the National Institute of Standards and  
Technology, Re: U.S. Patent No. 6,278,217 w/ Enclosures**



UNITED STATES DEPARTMENT OF COMMERCE  
National Institute of Standards and Technology  
Gaithersburg, Maryland 20899

December 5, 2001

Ms. Jo Burke  
OBLON Spivak et al  
1755 Jefferson Davis Highway  
Suite 400  
Arlington, VA 22202-3509

Dear Ms. Burke,

This letter is in response to your October 9, 2001, Freedom of Information Act (FOIA) request to the National Institute of Standards and Technology (NIST) for information on contract number 70NANB8H4022. Your request was received at the NIST FOIA Control Desk on October 9, 2001.

Enclosed are the following documents which are responsive to your request: (1) a copy of the Project Brief which was printed from the Advanced Technology Program (ATP) website; and (2) a copy of the patent. According to our records, Patent Number US 6,278,217 B1 was made under Cooperative Agreement Number 70NANB8H4022 awarded by NIST.

NIST plans to take no further action regarding your request and has determined to waive any fees associated with this particular FOIA request. Should you have questions, call Phyllis Boyd of my staff on 301-975-4062.

Sincerely,

Sharon E. Bisco  
Freedom of Information Act Officer

Enclosures

**NIST**



## Project Brief

Photonics Manufacturing (October 1998)

# Manufacturable Solid-State Lighting

*Develop new materials and processing technologies to demonstrate cost-effective manufacturing of white lamps based on light-emitting diodes (LEDs), which could save many millions of dollars in energy costs and open many new markets for LEDs.*

**Sponsor: Cree Lighting (formerly Nitres, Inc., formerly Widegap Technology, LLC)**

340 Storke Road  
Goleta, CA 93117

- Project duration: 1/1/1999 - 12/31/2001
- Total project (est.): \$5,882,386.00
- Requested ATP funds: \$2,882,369.00

Standard white lights have several major drawbacks, including the inefficiency of incandescent lamps and the hazardous material (mercury) contained in fluorescent lamps. Both of these problems could be eliminated if lamps were made of light-emitting diodes (LEDs). Widegap Technology (WiTech) and the General Electric Co. (Schenectady, N.Y., and Cleveland, Ohio) plan to develop new materials and processing technologies to demonstrate cost-effective manufacturing of solid-state, LED-based white lights. The joint venture will capitalize on the recent advent of high-efficacy, short-wavelength LED devices to make lamps offering three times the light output, much greater efficacy (50 lumens per watt), and 100 times the lumens per dollar than that offered by existing white LEDs. To accomplish this objective, the companies will improve the performance of gallium nitride (GaN) semiconductor devices, or chips, through advances in LED structure and heat management. An inorganic phosphor blend will be integrated into the chip or packaging to efficiently convert the short-wavelength radiation emitted by the precisely "tuned" LED to visible white light. Processes for making GaN materials will be modified to achieve high quality and yield, and novel silicone-based polymers will be fabricated to make packaging that will not be discolored by the short-wavelength light. The new technologies then will be used to make proof-of-concept flashlights and light bulbs. The fabrication of reliable, uniform devices with all the requisite characteristics while maintaining low cost will be very difficult. The project brings together a start-up that has cutting-edge GaN technology and a major U.S. lighting manufacturer to create a technology to challenge the solid-state LED market, where foreign competition is strong. If successfully developed, the new technology could save many millions of dollars in energy costs and create new markets for chips and bulbs in applications ranging from automotive lighting to traffic signals and

computer backlighting. The new materials and device designs also will benefit the semiconductor and photonics industries. Non-lighting applications for the LEDs could include projection displays, high-density optical data storage, satellite and cellular communications devices, and laser surgery.

**For project information:**

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**Active Project Participants**

- General Electric Corporate R&D (Schenectady, NY)  
*[Original, Active Member]*

**ATP Project Manager**

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US006278217B1

(12) United States Patent  
Kliman et al.

(10) Patent No.: US 6,278,217 B1  
(45) Date of Patent: Aug. 21, 2001

(54) HIGH VOLTAGE GENERATOR STATOR  
WITH RADIALLY INSERTED CABLE  
WINDINGS AND ASSEMBLY METHOD

4,900,965 2/1990 Fisher ..... 310/216  
6,130,496 10/2000 Takigawa et al. ..... 310/196

FOREIGN PATENT DOCUMENTS

WO 97/45923 12/1997 (WO).  
WO 97/45934 12/1997 (WO).  
WO 97/45939 12/1997 (WO).

OTHER PUBLICATIONS

"The World's First High-Voltage Generator", copied from www.abb.com on Sep. 13, 1999.  
Conventional ECM GE Stator (cross-section) represents stator used commercially prior to 1999.  
"Outline of Presently Marketed Blower ECM" represents stator used commercially prior to 1999.

\* cited by examiner

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Assistant Examiner—Dang Dinh Le

(74) Attorney, Agent, or Firm—Nixon & Vanderhye P.C.

(57) ABSTRACT

A stator for a high voltage generator has cable windings that are radially inserted into the stator slots. The stator is assembled as the cable windings are laid into the stator slots. The stator slots are left wide open to allow the cable windings and separator bars to be inserted in the slot as the stator is assembled. The open slots have sidewalls that are defined by stator teeth, which extend radially out from a rotor jig in the stator. As each coil section is laid in a slot, a separator bar is inserted over the coil so that another coil section can be laid into the stator. The coils are stacked in a slot and sandwiched between separator bars also in the slot. The separator bar is keyed to the sidewalls of the teeth to provide structural support for the cable windings.

13 Claims, 4 Drawing Sheets

(56) References Cited

U.S. PATENT DOCUMENTS

|           |                                 |          |
|-----------|---------------------------------|----------|
| 871,738   | • 11/1907 Heitmann et al.       | 310/214  |
| 1,375,699 | • 4/1921 Ilg                    | 310/214  |
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